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9/19/11



Re: Draft Sediment Transport Evaluation Report - EPA comments

Ravi Sanga to: Dan Berlin

09/19/2011 10:07 AM

Bruce Nairn, "Martin, Craig A NWS", Debra Williston - Work, Debra
Cc: Williston - Home, Doug Hotchkiss, Jeff Stern, John Herzog, "Gailani,
Joe Z ERDC-CHL-MS", Kathy Ketteridge, Kirsten Payne, Mark

Dan and Doug -- Attached are EPAs comments on the Draft Sediment Transport Evaluation Report. A meeting needs to happen between the EWG and EPA in order to discuss and resolve issues within the comments.

Please let me know if you have any questions.

regards,

Ravi



EPA Comments STER 9_16_11docx.docx

Ravi Sanga, MS
Environmental Scientist - Remedial Project Manager
US EPA Region 10
Office of Environmental Cleanup
phone: (206) 553-4092
fax: (206) 553-0124

Dan Berlin	[attachment "Draft STER transmittal letter_7-29-...	07/29/2011 04:20:08 PM
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From: Dan Berlin <dberlin@anchorqea.com>
To: Ravi Sanga/R10/USEPA/US@EPA, "Martin, Craig A NWS" <Craig.A.Martin@usace.army.mil>, "Rule, Rebecca A NWS" <Rebecca.A.Rule@usace.army.mil>, Peter Leon <PLEon@parametrix.com>, "Gailani, Joe Z ERDC-CHL-MS" <Joe.Z.Gailani@usace.army.mil>
Cc: Bruce Nairn <Bruce.Nairn@kingcounty.gov>, Debra Williston - Home <(b) (6)>, Debra Williston - Work <debra.williston@kingcounty.gov>, Doug Hotchkiss <hotchkiss.d@portseattle.org>, Jeff Stern <jeff.stern@kingcounty.gov>, John Herzog <jherzog@geoengineers.com>, Kathy Ketteridge <kketteridge@anchorqea.com>, Kirsten Payne <kpayne@anchorqea.com>, Kym Takasaki <takasaki.k@portseattle.org>, Mark Larsen <mlarsen@anchorqea.com>, Matt Woltman <mwoltman@anchorqea.com>, Nathan Soccorsy <nsoccorsy@anchorqea.com>, Pete Rude <pete.rude@seattle.gov>, R Carscadden <rcarscadden@integral-corp.com>, Scott Becker <sbecker@integral-corp.com>, Susan McGroddy <susanm@windwardenv.com>, Tom Wang <twang@anchorqea.com>, Warren Hansen <warrenh@windwardenv.com>
Date: 07/29/2011 04:20 PM
Subject: Draft Sediment Transport Evaluation Report

[attachment "Draft STER transmittal letter_7-29-11.pdf" deleted by Ravi Sanga/R10/USEPA/US]
[attachment "EW Draft STER_7-29-11.pdf" deleted by Ravi Sanga/R10/USEPA/US]

Ravi,

Attached is the Draft Sediment Transport Evaluation Report. A pdf of the text is attached, and the figures and appendices can be downloaded from the EW website. The logon credentials are provided below:

www.eastwaterwaygroup.com

USEPA SF



1387576

The site has two levels of login credentials. Please enter the login and pass information when initially prompted:

Login: (b) (6)
Pass: (b) (6)

EPA login:

Upon entry to the site, please enter the following login credentials:

Login: (b) (6)
Pass: (b) (6)

Please note that there are separate login credentials for stakeholders. We can post these files for the stakeholders and provide those login credentials if you'd like us to.

Please let me, Tom, or Kathy know if you have any trouble with the website or have any questions.

Thanks

Dan

Dan Berlin

ANCHOR QEA, LLC

dberlin@anchorgea.com

720 Olive Way, Suite 1900

Seattle, Washington 98101

T 206.287.9130

D 206.903.3322

F 206.287.9131

www.anchorgea.com

Anchor QEA's Seattle office has moved. Please update your records to reflect our new address.

US Environmental Protection Agency Comments, East Waterway Sediment Transport Evaluation Report, East Waterway Operable Unit, Harbor Island Superfund Site, July 29, 2011

General Comment:

More information is needed to justify the assumption of 2 Pa as the maximum shear stress experienced at some of the docking locations and the navigation channel in East Waterway. Two (2) Pa for short bursts should not induce excessive erosion with depth. EPA fully understands that available geochronology data indicate that some of these areas are depositional. However, geochronological core data are sparse and insufficient to indicate whether these areas have experienced historic scaring or local mixing from props. The size of ships that can (but, possibly do not presently) use some of these areas must also be discussed. When any large vessel, and its associated tugs, maneuver there is always a potential of a larger shear stress and associated scour due to extreme handling events and this must be more clearly discussed in the text.

In addition, please add more information on how the CSM can be improved and refined for the north, shallow end of the river where 1) velocity is small, 2) prop wash is nominal and 3) the bottom is armored by gravel/there is no evidence of sedimentation. More discussion is needed between EPA and the EWG regarding adding these multiple Lines of Evidence in improving the CSM. Also, the uncertainty discussion in Section 6.3.1 needs to be more developed; the vessel operation model scenarios have very little supporting data and require significant assumptions about operations. For example, Scenario 7 – Area 2, Slip 36 model simulations were calculated without specific feedback from the USCG (described in Table 5-2, Vessel Operation within each Operational Area in East Waterway). Also, the description of uncertainties related to prop wash is incomplete. For example, steady state conditions assume a fully developed boundary layer, which is not a conservative assumption. Please add additional clarity to the uncertainty discussion.

Specific Comments:

- 1) Section 5.1.1, second paragraph. JETWASH is not on the USACE list of “approved” models. However it does not need to be on the list to be used at the East Waterway. EPA and the EWG will need to discuss an appropriate reference further for the JETWASH model.
- 2) Section 5.1.1, third paragraph. More justification is needed regarding assumptions of a logarithmic profile for flow induced by a prop. The assumption of a logarithmic profile would be appropriate if a developed flow regime existed. However, prop wash is

inherently un-developed flow. Therefore, log profile is incorrect. Hence, the assumption is not a "logarithmic velocity profile", rather this profile is being used with the understanding that this is an additional level of uncertainty to the model predictions. More explanation is needed regarding at what height the value of velocity is used in the measurement. This is the value at which a logarithmic profile is assumed (between this value and the bed surface). There is significant difference in the uncertainty of this assumption if the value is at 20 cm vs 2 m, for example. A discussion between EPA and the EWG is needed regarding this issue.

- 3) Section 5.4.1, first paragraph. Please confirm that the USCG has provided additional data to determine if these estimates are correct.
- 4) Section 5.1.2, third paragraph. Please discuss uncertainty introduced by not accounting for emergency operations. Unlike large storms, emergency operations are not recorded. Therefore, we cannot monitor in response to emergency operations. Please quantify the recurrence – for example is it very rare (1000 year return period event). Also indicate how EWG plans to monitor for extreme scours as this is of concern.
- 5) Section 5.1.2, fourth paragraph. Please note that extremes exist within typical operating conditions (bad weather days) vs extremes with very long return periods (emergency operations).
- 6) Section 5.1.2, second paragraph. With regards to the following sentence: Tugs transiting the waterway". Please explain if this activity is fast or slow or typical.
- 7) Section 5.1.4.1, first paragraph. Please explain if we are assuming that this maximum velocity can occur anywhere within Area 1. A figure is needed to provide additional clarity for this scenario.
- 8) Section 5.1.4.2, first paragraph. "Predicted velocity generated by the ship's..." Please clarify the red portion and yellow portion on figure 5-4 and how these portions are related to the velocity scale. Specifically, can the red shaded area experience velocity of 10+ ft/s while the yellow area experience velocity of approximately 8 ft/s? If this is correct, then how is this reconciled with Figure 5-19, which seems to show a narrower region (1A) of high shear stress, while the channel only experiences 2 Pa. The region of 2 Pa in Figure 5-19 seems to overlap with the yellow region in Figure 5-4. Please verify that this is correct. Also clarify if the yellow region in Figure 5-4 represents areas with velocity of 8 ft/s. If this is true please explain if this induces higher shear than 2 Pa.

- 9) Section 5.2. paragraph 2. "Figure 5-19 provides maximum bed shear..." As stated previously (figure 5-4), there seems to be velocity regions in the middle of the channel that would produce shear stress greater than 3 Pa. Please clarify.
- 10) Section 5.3.2, paragraph 3. The following sentence needs clarification: "For all cases, the near-bed velocity due to pressure fields (1.3 ft/s) was less than the near-bed velocities predicted due to propwash throughout the EW (3.0 ft/s and greater)" Please explain if the velocity should be added to the prop velocity to provide a maximum velocity induced by ship movement or whether the prop velocity and pressure-field velocity occur at different locations.
- 11) Section 5.4.3, paragraph 1. Please add information about rare and undocumented scenarios (emergency operations). Their frequency is not definable, but it may be possible to provide some general quantification of magnitude (shear stress) related to these possible events. The text does not attempt to quantify this. This is not acceptable, please add the appropriate text or documentation of extreme events at other sites to describe what this scour may look like in EWW. More documentation needs to be added regarding extreme events at other sites to describe what this scour may look like on the LDW. Extreme events have very high shear stress – so the EW-specific critical stress value is irrelevant and we can use other sites as examples of what might happen on the LDW.
- 12) Section 5.4.3, paragraph 3. With regards to the Fox River, the decision to accept the results was due to multiple factors; "accepting" model results as valid was only secondary. In addition, the Fox River was for recreational boat prop wash, which is quite different from container ship navigation. It is not appropriate to use the Fox River to demonstrate model validity at the EWW, please remove this language.
- 13) Section 6, table 6-3. Linear and log-linear regression must be checked against lowest shear stress where zero erosion value is measured. Critical shear stress cannot be lower than the lowest Sedflume measured value no matter what the regression shows. Critical value also cannot be higher than the lowest shear stress for which erosion occurred. This should have been checked when developing tables 6-2 and 6-3 and needs to be checked now. Comparing to measurements may eliminate some of the discrepancy for SF_04 and SF_07 critical values for the various regression methods.
- 14) Section 7.3.7. Although not an uncertainty, it must be noted in this section that resuspension and redeposition by ship traffic is not included in these scenarios.

15) Section 8.2, paragraph 2. The following sentence requires further explanation:

“This observation is not consistent with the results of geochronological core data (Section 3); which imply that areas south of Slip 27 (between EW Stations 4000 and 5200) are not subject to mixing at depth below the mudline.” Please expand on this sentence. Please explain how many cores were used to determine that modeling was inconsistent with core data. Also clarify the final conclusion that prop-induced erosion is possible, but not probable in these areas. Please add information on how confident we are that contaminated sediment will not re-suspend in these areas.